

ABSTRACT

Devices and methods for fluid flow control within a production tubing string wherein a temporary flow blockage is established and selectively removed from the tubing string so that pressure testing or operation of a hydraulic tool within the string may be performed. A flow control device includes a housing that defines a flowbore therethrough with a restricted diameter portion. The restricted diameter portion presents a seating surface for a plug member and is provided by an annular shell that is shaped to project convexly inwardly. The shell may be fashioned of metal, elastomer or another suitable material, and it is capable of yielding to permit passage of a plug member upon application of a suitably great amount of fluid pressure. In operation, a plugging member is dropped in to the tubing string from the surface of the well and seats upon the seating surface. The tubing string is then pressured up to a first fluid pressure level for testing, tool operation, or the like, and the pressuring up will urge the plugging member against the plug seat in order to effect a fluid seal. When it is desired to remove the plugging member from the tubing string, and reestablish fluid flow through the tubing string, fluid pressure above the plugging member is raised to a second, overpressure level. The plug is then urged through the restricted diameter portion and expelled from the device to the wellbore sump below.